Document name: User manual Offshore ear plug EM2140DC-S and headset AK5850HS and AK5850S

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1. a) Introduction Offshore ear plug EM2140DC-S – custom made hearing protection

Congratulation with your new custom made Offshore earplug! This product is molded to fit your ears and has built in communication used together with a PTT-unit and radio.
The Offshore earplug can be used together with earmuffs or together with a PTT-unit.
To ensuere correct use and to get all the advantages of the product, please read this manual carefully.

Wrong use can cause hearing damages. The hearing protection shall be worn at all times in noisy invironments. Be aware of that this ear plug is personally molded to fit your ears. Since the shape of the inner ear is changing it is recommended to take new molds every 4th year to ashieve the best attenuation.

The Offshore Ear Plug is made of medical grade Flexit (polydimetylsilikosan) and the cable is made of medical grade PUR (polyurethane) wich will decrease the danger of alergic reactions.

Warning: If the recommendations in this user manual is not adhered to , the protection of this PPE may be severly impaired!

1. b) Before use

Before use, please be sure of that the ear plugs are clean. If necessary use the enclosed brush or cleaning pin to remove wax and other pollution from the sound opening. A small quantity of Otoferm-cream in the ear can make it easier to make a correct placement of the ear plug.
If you use the ear plug wrong it may give poor protection and sound quality. Be sure of that the Offshore ear

plug always is placed correct and remember to use the hearing protection at all time in noisy environments. After a period of 3-4 years the shape of the inner ear are changing and the attenuation can be reduces. It will then be necessary to renew the offshore ear plug.

1. c) Right and left orientation

The Offshore ear plugs are marked with a red dot for right ear and a blue dot for left ear. The small handle on the plug shall be on top side when it shall be slided into the ears. The cable shall point upwards, just in front of the upper ear.

1. d) How to place the earplug into the ear

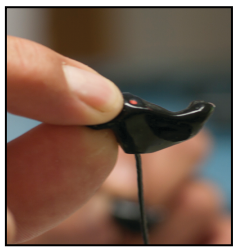
Seize the small handle on the impression between your index finger and thumb. The cable shall point upwards in front of the ear.

Tread the earplugs sound opening into the ear with rotating motions until it feels comfortable. At last make a light pressure by index finger on the earplug until the plug is toroughly into the ear. It is important to not use force.

1. e) How to remove the plug from the ear

Seize the small handle on the impression and pull by a slightly forward rotation.

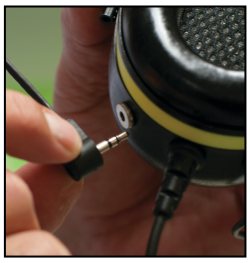
1. f) Correct placement



The Offshore earplug make a tight connection to the ear without being uncomfortable ore make a pressure in the ear.
It may take some weeks to get used to the ear plug.

Please take contact with Safe Sound Audio AS if you get lasting problems.

1. g) How to connect the ear plug into the earmuffs



The Offshore earplug shall preferably be used together with AK5850S earmuffs to get maximum protection.
Connect the ear plugs jack connector into the inlet on the left cup of the earmuffs.

The earplugs may also be used without the earmuffs, but then you need an edition with military Nexus jack plug. This ear plugs has to be connected to an external PTT-unit made for the different brands of UHF/VHF-radios. Ask your supplier for information. **Warning:** Do not connect or disconnect the device to the ear muffs or the PTT unit or switch on/off the radio while the equipment are placed in the ears. It is also important that the interconnecting cable is not damaged. Shortcuts or other disturbance may course high noise that can damage the hearing. The electrical audio output of this hearing protector may exceed the daily limit sound level. Electric input level for which the mean plus one standard deviation When the offshore Earplug is used alone the A-weighted diffuse-field related sound pressure level is equal to 82 dB at 79,3 dBµV. Be careful with the volume control!

1. h) The complete setup

The earmuffs shall be placed on the ear outside the earplugs. The cables shall be between the ear muffs and the skin just in front of the upper ear. **Warning:** These ear-plugs should not be used where there is a risk that the connecting cord could be caught up during use.

1. i) Cleaning and maintenance

This product can deteriorate with use and shall regularly be inspected for serviceability. The Offshore earplug can be cleaned with a brush or cleaning pin. To remove heavy pollution special cleaning clothes are available. Please contact Safe Sound Audio AS to get more information.
This product may adversely be affected by certain chemicals. Do never use water, oil or other detergents and cleaning compounds. This may damage the equipment.
Always store the Offshore ear plug in its carrying bag when it is not in use.

1. j) Sound attenuation and mass (EN 352-1, clause 4.3.12)

Offshore Ear Plug

Frequency Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	32,3	32,9	31,7	31,6	35,4	41,2	38,2	42,3	41,3
St.dev. (dB)	4,0	3,8	4,2	3,6	4,0	3,3	3,3	5,5	6,8
APV (84%)	28,3	29,1	27,5	28,2	31,4	37,9	34,8	36,8	34,5

H_{84}	32	dB
M_{84}	29	dB
L_{84}	29	dB
SNR_{84}	32	dB

1. k) ATEX

This product is ATEX Certified under certificate no. 12ATEX1277
Ui:9,0V, Ii:300mA, Pi:0,6W, Ci:Negligible, Ri:828 Ω, Li=3,497mH, Li/Ri: 4,22µH/Ω

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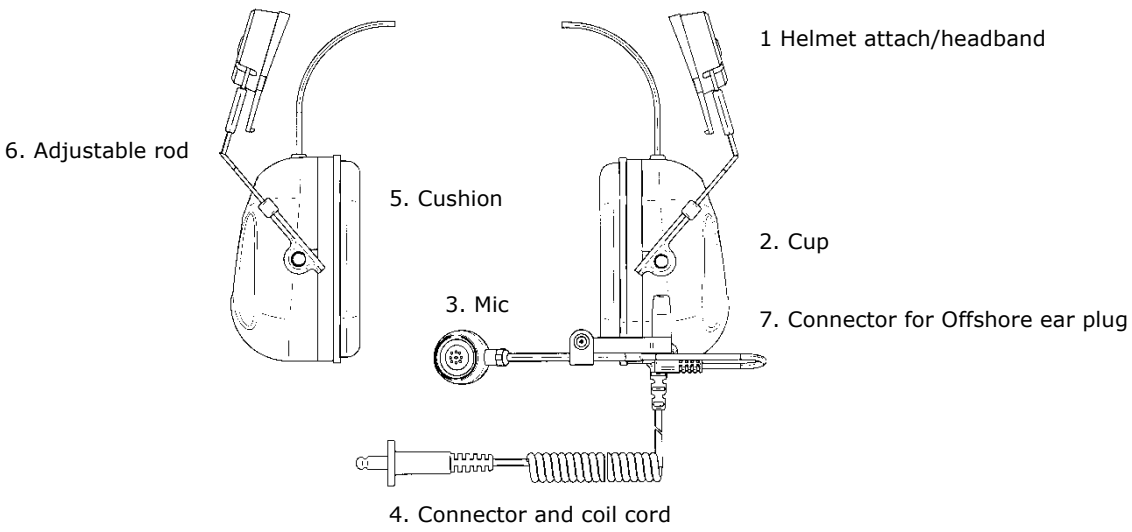
2. Headset AK5850S (helmet attachment) AK5850HS (headband) Users manual



2 a) Introduction

The headset AK5850S is made for use in noisy areas. It can be used together with helmet (AK5850S, helmet attachment) or without helmet (AK5850HS, headband). To achieve the best attenuation it is recommended to use the AK5850S/AK5850HS together with the Offshore ear plug. The hearing protection shall be worn at all times in noisy environments. The headset is made of metal and ABS. The parts in contact with the skin (ear cushions) are made of polyvinylchloride. **Warning:** If the recommendations in this user manual is not adhered to, the protection of this PPE may be severly impaired!

2 b) How to adjust the headset before use

The headset shall be fitted and adjusted according to the manual to achieve maximum protection. Use of glasses, beard or other items that can course leakage between the skin and the ear cushions may impair the attenuation.
Place the helmet attachment (1) into the slots on the helmet and put the helmet on to your head. The helmets approved for use is Peltor G22C/D, OBX and Balance AC. The headband version can be put directly over the top of your head.
Adjust the adjustable steel rods (6) up and down until the cups are perfectly covering your ears.
Warning: These ear-muffs are of large size range. Ear-muffs complying with EN 352-1 are of “medium size range” or “small size range” or “large size range”. “Medium size range” ear-muffs will fit the majority of wearers. “Small size range” or “large size range” ear-muffs are designed to fit wearers for whom “medium size range” ear-muffs are not suitable.

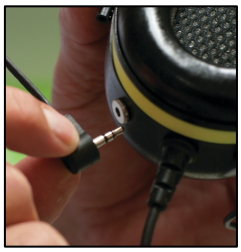
The cups can be set in rest position by pulling them straight out from the ears. This shall only be done in areas without noise since it will be a gap between the earmuffs and the ears. The normal position can be maintained by pressing the cups back again towards the ears.

Adjust the microphone (3) to a position straight in front of the mouth. The distance shall not exceed 15 mm. to achieve the optimal noise attenuation.

2 c) How to connect the headset to a radio

The headset can be connected to a 2-way radio by connecting the connector (4) into a PTT-unit made for the different radios. The headset cannot be connected directly to the radio. Ask your supplier for the right PTT-unit made for each radio brand. This headset is provided with electrical audio input. Check correct operation before use. **Warning:** Do not connect or disconnect the device to the PTT unit or turn on/off the radio while the equipment is placed over the ears. It is also important that the interconnecting cord is not damaged. Shortcuts ore other disturbance may course high noise that can damage the hearing. The electrical audio output of this hearing protector may exceed the daily limit sound level. When the earmuffs AK5850S / AK5850HS is used alone the electric input level for which the mean plus one standard deviation A-weighted diffuse-field related sound pressure level is equal to 82 dB is at voltage U = 208 mV. Be careful with the volume control!

2 d) How to connect the headset to the Offshore Ear Plug



Connect the 3,5 mm. jack plug on the Offshore ear plug into the 3,5 inlet on the left cup. This shall be done before that the Offshore ear plug is placed into the ears.

2 e) Maintenance and storage

This product can deteriorate with use and shall regularly be inspected for serviceability. The headset shall be kept clean and free of damage. Otherwise the attenuation can be poor. This product may adversely be affected by certain chemicals. The headset can be cleaned by ordinary soap and water and can be disinfected with alcohol or clorhexidine.
Avoid liquids into the headsets foam parts. The headset can be used and stored in temperatures between -30°C to + 60°C. Keep the headset stored in a temperate and dry place.
Hygienic kits (Article no. AK5851, included foam parts and cushions) and other spare parts can be ordered from your supplier or directly from the factory. The hygienic kits are easy to replace. No tooling is required. Just grab the snap old ear cushion from inside by your fingers and snap it out. Replace the outer foam plate with the new one and push the new ear cushion back in place by hand force. The fitting of the ear cushions may affect the acoustic performance and you shall hear a click when it is in the right position. It shall be no gap between the cushions and the headset cups. Ear-muffs, and in particular cushions, may deteriorate with use and should be examined at frequent intervals for cracking and leakage, for example. The fitting of hygienic covers to the cushions may affect the acoustic performance of the earmuffs.

2 f) Sound attenuation and mass (EN 352-1, clause 4.3.12)

AK5850HS

Frequency Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	18,1	20,0	31,2	39,3	31,0	34,8	41,2	42,5	40,8
St.dev. (dB)	3,3	2,3	3,1	3,6	2,3	2,9	3,9	4,9	5,1
APV (84%)	14,7	17,8	28,1	35,8	28,7	31,9	37,4	37,6	35,8

H_{84}	32	dB
M_{84}	28	dB
L_{84}	20	dB
SNR_{84}	30	dB

Mean mass: 393 g.

AK5850S

Frequency Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	18,6	19,9	27,5	35,2	32,0	38,1	39,2	36,2	34,6
St.dev. (dB)	3,7	3,3	4,0	3,7	3,4	3,6	4,0	4,1	4,8
APV (84%)	14,9	16,6	23,5	31,5	28,6	34,5	35,2	32,0	29,8

H_{84}	31	dB
M_{84}	26	dB
L_{84}	20	dB
SNR_{84}	29	dB

Mean mass: 404 g.

2 g) ATEX approval

This product is ATEX Certified under certificate no. 03ATE1351
Ui:9V, Ii:291mA, Pi:1,3W Ci:Negligible, Li=36mH,
Li/Ri:135 µH/Ω.

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3 General information for Offshore Ear Plug EM2140DC-S and headset AK5850HS/AK5850S

3 a) Sound attenuation (headset and ear plug used in combination)

AK5850 HS Over-the-head headband TwinCom with custom moulded earplug

Frequency Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	35,3	35,0	44,2	43,0	40,0	46,8	49,8	48,6	47,7
St.dev. (dB)	5,6	5,1	4,6	5,0	3,6	4,9	3,8	4,6	4,7
APV (84%)	29,7	29,9	39,6	38,0	36,4	42,0	45,9	44,0	43,0

AK5850S Helmet attached hearing protector TwinCom with custom moulded earplug

Frequency Hz)	125	250	500	1000	2000	3150	4000	6300	8000
Mean attenuation(dB)	34,3	35,0	41,2	43,2	40,4	47,3	52,6	53,2	50,9
St.dev. (dB)	4,8	3,5	4,9	4,9	4,2	4,9	3,9	3,6	5,0
APV (84%)	29,5	31,5	36,3	38,4	36,2	42,4	48,8	49,5	45,9

	H_{84} (dB)	M_{84} (dB)	L_{84} (dB)	SNR_{84} (dB)
Over-the-head headband TwinCom with custom molded earplug	39	37	33	40
Helmet attached hearing protector TwinCom with custom molded earplug	39	37	34	40

3 b) Maximum auxiliary input (AUX)

When the earmuffs AK5850S / AK5850HS and the Offshore Ear Plug EM2140DC-S is used together the electric input level for which the mean plus one standard deviation A-weighted diffuse-field related sound pressure level is equal to 82 dB at voltage U = 118 mV. Do not connect or disconnect the equipment or turn on/off the radio while the equipment is placed into/over the ears. Be careful with the volume control!

3 c) Manufacturing and certification

The products are made in Norway by:

A-KABEL AS
Box 64, 2151 ÅRNES, NORWAY
Phone.: +47 63 91 28 20, *Fax:* +47 63 91 28 30
E-mail: engen@a-kabel.no

and marketed by:

Safe Sound Audio AS
Nedre Banegate 19, 4014 Stavanger
Phone: (+47) 910 00 032
E-mail: post@safesound.no

who hereby declears:

that the TwinCom system - Offshore Ear Plug and headset AK5850S/AK58HS are manufactured in accordance with the harmonized standards EN 352-1, EN352-2, EN352-3 and EN352-6 to Directive 89/686/EEC.

The EC type examination under certificate no. 12132LG01, rev. 1,12151RHS01 and 12188PFS01 are issued by Notified Body No. 0403:
Finnish Institute of Occupational Health (FIOH)
Topeliuksenkatu 41 B
00250 Helsinki
Finland

Further the headset is manufactured and tested in accordance to
Directive 94/9/EC-A:VII and the EN standards 60079-0:2009/2011, 60079-11:2007 and EN ISO/IEC 80079-34:2011.The equipment is EC type examinated under certificate no.12ATEX277 and 03ATEX1351 issued by Approved Certification Body No. 0470 Nemko, Gaustadalèen 30, 0373 Oslo, Norway.